REMARKS

Claims 1-2, 9-12, and 20-21 stand rejected under 35 U.S.C. 102(e) as being anticipated by Uchiike et al. (U.S. Patent No. 6,236,527 B1). Applicants respectfully traverse the rejection because the cited reference fails to disclose (or suggest) a change in the driving current during a load/unload operation at a time other than when a speed control operation is carried out.

In the Office Action, the Examiner cites Uchiike as disclosing a storage apparatus to carry out a ramp load/unload operation to load/unload a head 4. (See FIG. 4 and col. 3, lns. 41-63). The Examiner further identifies a controller (CPU 10) configured to control a driving current which is supplied to the driving parts so as to undergo a gradual change during at least one of a load operation and an unload operation. With respect to the gradual change in the driving current, the Examiner asserts that it occurs at arbitrary times other than when a speed control operation is carried out, where the speed control operation controls the speed of the head when it is loaded to the recording medium or when the arm is pushed in the parking area as the unload operation is completed. (See FIGs. 2B and 5, col. 6, lns. 11-26).

The Examiner further asserts that Uchiike shows at least a gradual change C2 of the driving current while the head is pushed to ascend the slope 6d of the parking area 6 during the unloading operation, and that the driving current change which occurs between C2 and P2 when the head is secured over the parking surface is relatively gradual in comparison

to the change that occurs between P1 and C1 during a loading operation. Applicants respectfully traverse these assertions of the Examiner.

Contrary to the Examiner's assertions, Uchiike does not teach or suggest that a gradual change in the driving current occurs during arbitrary times other than a time when a speed control operation is carried out, wherein the speed control operation controls a speed of the head when the head is loaded or unloaded. As described in col. 6, lns. 5-26 of Uchiike, C1 and C2 denote velocity-controlled current portions at the time of when velocity is controlled, and P2 and P2 denote pulse current portions. That is, the gradual change of the driving current shown by curves C1, C2 and C3 of Uchiike are all described in col. 6 as velocity-controlled current portions that control velocity of the head. The continuous VCM current waveforms C1 and C2 and the pulse-shaped VCM current waveforms P1 and P2 shown in FIGs. 4a and 4b correspond to the current portions C1, C2, P1 and P2. The pulse current portions P1 and P2 do not show a gradual change, but instead are pulse-shaped and show a sharp change in the driving current. For these reasons, withdrawal of the §102(e) rejection is respectfully requested.

Claims 5, 15, and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Uchiike in view of Huang et al. (U.S. Patent No. 6,583,964 B1). Applicants respectfully traverse the rejection for the reasons recited above.

Huang merely proposes an actuator system having a primary actuator mounted on a ridged arm assembly, and a mode-canceling actuator attached to the rigid arm assembly

so as to cancel at least one of the vibrational modes of the primary actuator. The vibration caused by the driving of the primary actuator is cancelled using the mode-canceling actuator. Although the Examiner cites col. 2, lns. 29-37 and col. 10, lns. 11-35 of Huang as teaching the low pass filter of the present invention, the cited text relates to gain stabilization, which reduces a bandwidth of the servo system.

In contrast, the present invention has a single actuator arm, and suppresses noise by making a driving current of the actuator undergo a gradual change, at least during arbitrary times other than the time when a speed operation is carried out, without requiring an additional actuator. In contrast, even if Uchiike and Huang could be combined, the combination would merely use the velocity-controlled current portions C1 and C2 at the time of velocity control, and the use of the mode-canceling actuator to cancel at least one of the vibrational modes of the primary actuator. The combination, however, would not teach or suggest the gradual change of the driving current at arbitrary times that are other than when the speed control operation is carried out. For these reasons, withdrawal of the §103 rejection of claims 5, 15 and 17 is respectfully requested.

Claims 7 and 18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Uchiike in view of Phan et al. (U.S. Patent No. 5,760,992). Applicants respectfully traverse the rejection.

Phan proposes a method of suppressing noise during a seek operation by (i) limiting the through rate of the power amplifier or (ii) averaging the control signal (VCM

driving current) or (iii) providing a constant speed control internal between an acceleration control and deceleration control during the seek operation.

However, the methods (i) and (ii) generate a phase delay in the velocity feedback loop and make the control operation unstable, and are therefore undesirable for achieving the purpose of the present invention. Additionally, the noise during the seek operation of Phan is problematic when the transition is made from the accelerating state to the decelerating state. Moreover, Phan fails to disclose or suggest a gradual change in a driving current occurring at arbitrary time other than a time when a speed control operation is carried out. Phan further fails to employ a ramp load/unload mechanism, and therefore there is no motivation to combine Phan and Uchiike. For all these reasons, withdrawal of the §103 rejection of claims 7 and 18 is respectfully requested.

Claims 8 and 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Uchiike in view of Koizumi et al. (U.S. Patent No. 5,982,570). Applicants respectfully traverse the rejection for the reasons recited above with respect to the rejection of independent claims 1 and 11.

Koizumi merely proposes a storage device having a plurality of operational modes selected by a CPU. One operational mode suppresses a generation of noise. Koizumi presses the seek noise of the actuator by switching a maximum value of the driving current between I1 and I2, as shown in FIG. 20B. However, Applicants respectfully submit that it is difficult to suppress a noise that is generated when the actuator is driven by employing

Koizumi's method because the main cause of the noise generation is the sharp change in the driving current, such as that shown in FIG. 20B. Therefore, the noise generated at least during arbitrary times other than a time when a speed control operation is carried out can not be suppressed by utilizing the method of Koizumi. Moreover, since these features are also not taught in Uchiike, any combination of Uchiike Koizumi would fail to teach or suggest a gradual change in a drive current during arbitrary times that are other than when the speed control operation is carried out, as recited in base claims 1 and 11. For these reasons, withdrawal of the §103 rejection of claims 8 and 19 is respectfully requested.

New claims 22-23 are added and depend from independent claims 1 and 11 respectfully. New claims 22-23 further define the controlling step as initially moving the head towards an outer peripheral direction of the recording medium during the load operation. Applicants respectfully request allowance of new claims 22-23 based on the features they recite, and also for the reasons recited above with respect to rejection of independent claims 1 and 11.

For all of the foregoing reasons, Applicants submit that this Application is in condition for allowance, which is respectfully requested. The Examiner is invited to contact the undersigned attorney if an interview would expedite prosecution.

Respectfully submitted,

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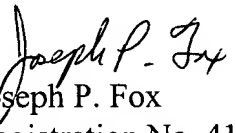
By: 

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